

**IN THE CLAIMS:**

Please amend the claims where indicated below:

1. **(Currently Amended)** A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well having a depth of at least 40 meV, wherein said depth is defined as using the difference between a valence band offset and a conduction band offset and wherein said at least one quantum well comprises of material that is free of indium and is comprised of GaAsSb;

barrier layers sandwiching said at least one quantum well; and  
confinement layers sandwiching said barrier layers.

2. **(Previously Presented)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

3. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

4. **(Original)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

5. **(Original)** The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.

6. **(Previously Presented)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

7. **(Previously Presented)** The VCSEL of claim 1 wherein said at least one quantum well further comprises greater than 1% N.

8. **(Previously Presented)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

9. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

10. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

11. **(Previously Presented)** The VCSEL of claim 6 wherein said confinement layers are comprised of GaAsN.

12. **(Previously Presented)** The VCSEL of claim 6 wherein said barrier layers are comprised of GaAsN and said confinement layers are GaAsP.

13. **(Previously Presented)** The VCSEL of claim 4 wherein said at least one quantum well comprises  $>1\%$  N.

14. **(Original)** The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

15. **(Original)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

16. **(Previously Presented)** The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

17. **(Previously Cancelled)**

18. **(Previously Cancelled)**

19. **(Original)** The VCSEL of claim 1 wherein said quantum well is up to and including 50Å in thickness.

20. **(Previously Presented)** The VCSEL of claim 19 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

21. **(Previously Presented)** The VCSEL of claim 19 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

22. **(Previously Presented)** The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsP.

23. **(Previously Presented)** The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.

24. **(Original)** The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs.

25. **(Original)** The VCSEL of claim 19 wherein said at least one quantum well comprises N.

26. **(Original)** The VCSEL of claim 25 wherein said barrier layers are comprised of GaAsP.

27. **(Original)** The VCSEL of claim 25 wherein said confinement layers are comprised of AlGaAs.

28. **(Previously Presented)** The VCSEL of claim 26 wherein said confinement layers are comprised of AlGaAs.

29. **(Original)** The VCSEL of claim 27 wherein said barrier layers are comprised of AlGaAs.

30. **(Original)** The VCSEL of claim 25 wherein said barrier layers are comprised of AlGaAs.

31. **(Previously Presented)** The VCSEL of claim 19 wherein said at least one quantum well comprises >1% N.

32. **(Original)** The VCSEL of claim 31 wherein said barrier layers are comprised of GaAsP.

33. **(Original)** The VCSEL of claim 31 wherein said confinement layers are comprised of AlGaAs.

34. **(Original)** The VCSEL of claim 32 wherein said confinement layers are comprised of AlGaAs.

35. **(Original)** The VCSEL of claim 33 wherein said barrier layers are comprised of AlGaAs.

36. **(Original)** The VCSEL of claim 31 wherein said barrier layers are comprised of AlGaAs.

37. **(Currently Amended)** A vertical cavity surface emitting laser (VCSEL), comprising:

at least one indium free quantum well comprised of GaAsSb, wherein the depth of said quantum well is defined as using the difference between a valence band offset and a conduction band offset;

GaAs barrier layers sandwiching said at least one quantum well; and

GaAs confinement layers sandwiching said barrier layers.

38. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of GaAs and at least one of Sb, N, Al, P.

39. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of GaAs and at least one of Sb, N, Al, P.

40. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

41. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.

42. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of AlGaAs.

43. **(Previously Presented)** The VCSEL of claim 37 wherein said at least one quantum well further comprises  $>1\%$  N.

44. **(Previously Presented)** The VCSEL of claim 37 wherein said barrier layers are comprised of GaAsP.

45. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs.

46. **(Previously Presented)** The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs.

47. **(Previously Presented)** The VCSEL of claim 37 wherein said quantum well is up to and including 50 Å in thickness.

48. **(Currently Amended)** A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well consisting essentially of GaAsSb, wherein the depth of said quantum well is defined asusing the difference between a valence band offset and a conduction band offset;

GaAs barrier layers sandwiching said at least one quantum well; and

AlGaAs confinement layers sandwiching said barrier layers.

49. **(Previously Presented)** The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsP.

50. **(Previously Presented)** The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsN.

51. **(Previously Presented)** The VCSEL of claim 48 wherein said at least one quantum well further comprises >1% N.

52. **(Original)** The VCSEL of claim 51 wherein said barrier layers are comprised of GaAsP.

53. **(Original)** The VCSEL of claim 51 wherein said barrier layers are comprised of AlGaAs.

54. **(Original)** The VCSEL of claim 48 wherein said quantum well is up to and including 50 Å in thickness.

55. **(Original)** The VCSEL of claim 54 wherein said barrier layers are comprised of GaAsP.

56. **(Original)** The VCSEL of claim 54 wherein said barrier layers are comprised of AlGaAs.

57. **(Previously Presented)** The VCSEL of claim 54 wherein said at least one quantum well further comprises  $>1\%$  N.

Claims 58-59 **(Cancelled)**.